



Lemington Riverside Mathematics Curriculum

Mathematics Opportunities KS1	Mathematics Opportunities KS2
<ul style="list-style-type: none">• Count and calculate in a range of practical contexts.• Use and apply mathematics in everyday activities and across the curriculum.• Repeat key concepts in many different practical ways to secure retention.• Explore numbers and place value up to at least 100.• Add and subtract using mental and formal written methods in practical contexts.	<ul style="list-style-type: none">• Count and calculate in increasingly complex contexts, including those that cannot be experienced first hand.• Rigorously apply mathematical knowledge across the curriculum, in particular in science, technology and computing.<ul style="list-style-type: none">• Deepen conceptual understanding of mathematics by frequent repetition and extension of key concepts in a range of engaging and purposeful contexts.• Explore numbers and place value so as to read and understand the value of all numbers.• Add and subtract using efficient mental and formal written methods.

- Multiply and divide using mental and formal written methods in practical contexts.
- Explore the properties of shapes.
- Use language to describe position, direction and movement.
- Use and apply in practical contexts a range of measures, including time.
- Handle data in practical contexts.

- Multiply and divide using efficient mental and formal written methods.
- Use the properties of shapes and angles in increasingly complex and practical contexts, including in construction and engineering contexts.
- Describe position, direction and movement in increasingly precise ways.
- Use and apply measures to increasingly complex contexts.
 - Gather, organise and interrogate data.
- Understand the practical value of using algebra.

Mathematics Curriculum Objectives	Area of Focus	Phase Aims -Milestone 1 (Yrs 1 & 2; End KS1)	Phase Aims -Milestone 2 (Yrs 3 & 4: End LKS2)	Phase Aims -Milestone 3 (Yrs 5 & 6:End UKS2)
To know and use numbers	Counting	<ul style="list-style-type: none"> Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens. Given a number, identify one more and one less. Count in steps of 2, 3, 5 and 10 from 0 or 1 and in tens from any number, forward and backward. 	<ul style="list-style-type: none"> Count in multiples of 2 to 9, 25, 50, 100 and 1000. Find 1000 more or less than a given number. Count backwards through zero to include negative numbers. 	<ul style="list-style-type: none"> Read numbers up to 10 000 000. Use negative numbers in context and calculate intervals across zero.
	Representing	<ul style="list-style-type: none"> Identify, represent and estimate numbers using different representations, including the number line. Read and write numbers initially from 1 to 20 and 	<ul style="list-style-type: none"> Identify, represent and estimate numbers using different representations. Read Roman numerals to 100 (I to C) and know that over time, the 	<ul style="list-style-type: none"> Write numbers up to 10 000 000 Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

		then to at least 100 in numerals and in words.	numeral system changed to include the concept of zero and place value.	
	Comparing	<ul style="list-style-type: none"> • Use the language of: equal to, more than, less than (fewer), most and least. • Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs. 	<ul style="list-style-type: none"> • Order and compare numbers beyond 1000. 	<ul style="list-style-type: none"> • Order and compare numbers up to 10 000 000.
	Place value	<ul style="list-style-type: none"> • Recognise the place value of each digit in a two-digit number (tens, ones). 	<ul style="list-style-type: none"> • Recognise the place value of each digit in a four-digit number. (thousands, hundreds, tens, and ones) • Round any number to the nearest 10, 100 or 1000. 	<ul style="list-style-type: none"> • Round any whole number to a required degree of accuracy. • Determine the value of each digit in any number.
	Solving problems	<ul style="list-style-type: none"> • Use place value and number facts to solve problems. 	<ul style="list-style-type: none"> • Solve number and practical problems with increasingly large positive numbers. 	<ul style="list-style-type: none"> • Solve number and practical problems.

To add and subtract	Complexity	<ul style="list-style-type: none"> • Solve one-step problems with addition and subtraction: • Using concrete objects and pictorial representations including those involving numbers, quantities and measures. • Using the addition (+), subtraction (-) and equals (=) signs. • Applying their increasing knowledge of mental and written methods. 	<ul style="list-style-type: none"> • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why. 	<ul style="list-style-type: none"> • Solve multi-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.
	Methods	<ul style="list-style-type: none"> • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • One-digit and two-digit numbers to 20, including zero. • A two-digit number and ones. 	<ul style="list-style-type: none"> • Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. • Add and subtract numbers mentally, including: 	<ul style="list-style-type: none"> • Add and subtract whole numbers with more than 4 digits, including using formal written methods. (columnar addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers.

		<ul style="list-style-type: none"> • A two-digit number and tens. • Two two-digit numbers. • Adding three one-digit numbers. • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. 	<ul style="list-style-type: none"> • A three-digit number and ones. • A three-digit number and tens. • A three-digit number and hundreds. 	
	Checking	<ul style="list-style-type: none"> • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. 	<ul style="list-style-type: none"> • Estimate and use inverse operations to check answers to a calculation. 	<ul style="list-style-type: none"> • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
	Using number facts	<ul style="list-style-type: none"> • Represent and use number bonds and related subtraction facts within 20. • Recall and use addition and subtraction facts to 20 fluently, and derive and 	<ul style="list-style-type: none"> • Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction. 	<ul style="list-style-type: none"> • Add and subtract negative integers.

		use related facts up to 100.		
To multiply and divide	Complexity	<ul style="list-style-type: none"> • Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. 	<ul style="list-style-type: none"> • Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems (such as n objects are connected to m objects). 	<ul style="list-style-type: none"> • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. • Use knowledge of the order of operations to carry out calculations involving the four operations.
	Methods	<ul style="list-style-type: none"> • Calculate mathematical statements for multiplication and division within the multiplication tables and write them 	<ul style="list-style-type: none"> • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. 	<ul style="list-style-type: none"> • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long

		<p>using the multiplication (\cdot), division (\div) and equals ($=$) signs.</p> <ul style="list-style-type: none"> • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. • Solve problems involving multiplication and division using mental methods. 	<ul style="list-style-type: none"> • Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. • Recognise and use factor pairs and commutativity in mental calculations. 	<p>multiplication.</p> <ul style="list-style-type: none"> • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers.
	Checking	<ul style="list-style-type: none"> • Use known multiplication facts to check the accuracy of calculations. 	<ul style="list-style-type: none"> • Recognise and use the inverse relationship between multiplication 	<ul style="list-style-type: none"> • Estimate and use inverse operations and rounding to check

			and division and use this to check calculations and solve missing number problems.	answers to a calculation.
	Using multiplication and division facts	<ul style="list-style-type: none"> • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. • Recognise odd and even numbers. • Use multiplication and division facts to solve problems. 	<ul style="list-style-type: none"> • Recall multiplication and division facts for multiplication tables up to 12×12. 	<ul style="list-style-type: none"> • Identify common factors, common multiples and prime numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. • Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). • Solve problems involving multiplication and division including using knowledge of factors and multiples,

				squares and cubes.
Fractions (including decimals, percentages, ratio and proportion)	Recognising fractions	<ul style="list-style-type: none"> • Recognise, find and name a half as one of two equal parts of an object, shape or quantity. • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. • Recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity. 	<ul style="list-style-type: none"> • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Round decimals with one decimal place to the nearest whole number. • Compare numbers with the same number of decimal places up to two decimal places. • Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or 	<ul style="list-style-type: none"> • Compare and order fractions whose denominators are all multiples of the same number. • Compare and order fractions, including fractions > 1. • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number. • Round decimals with two decimal places to the nearest whole number and to one decimal place. • Read, write, order and compare numbers with up to three decimal places.

			<p>quantities by 10.</p> <ul style="list-style-type: none"> Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Compare and order unit fractions and fractions with the same denominators. 	<ul style="list-style-type: none"> Identify the value of each digit in numbers given to three decimal places. Solve problems involving number up to three decimal places. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.
	Equivalence	<ul style="list-style-type: none"> Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. 	<ul style="list-style-type: none"> Recognise and show, using diagrams, families of common equivalent fractions. Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$. 	<ul style="list-style-type: none"> Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Read and write decimal numbers as fractions. Recognise and use thousandths and relate them to tenths,

				<p>hundredths and decimal equivalents.</p> <ul style="list-style-type: none"> • Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Associate a fraction with division and calculate decimal fraction equivalents. • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
	Solving problems	<ul style="list-style-type: none"> • Write simple fractions for example, $\frac{1}{2}$ of 6 = 3. 	<ul style="list-style-type: none"> • Add and subtract fractions with the same denominator within one whole. • Solve problems involving increasingly harder fractions. • Calculate quantities and 	<ul style="list-style-type: none"> • Add and subtract fractions with the same denominator and denominators that are multiples of the same number. • Add and subtract fractions with different denominators and mixed

			<p>fractions to divide quantities (including non-unit fractions where the answer is a whole number).</p> <ul style="list-style-type: none"> • Add and subtract fractions with the same denominator. • Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. • Solve simple measure and money problems involving fractions and decimals to two decimal places. 	<p>numbers, using the concept of equivalent fractions.</p> <ul style="list-style-type: none"> • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. • Multiply simple pairs of proper fractions, writing the answer in its simplest form. • Solve problems which require knowing percentage and decimal equivalents of, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25. • Divide proper fractions by whole numbers. • Multiply and divide numbers by 10, 100 and 1000 giving answers up
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to three decimal places.

Ratio and proportion

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
- Solve problems involving the calculation of percentages and the use of percentages for comparison.
- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

<p>To understand the properties of shapes</p>		<ul style="list-style-type: none"> • Recognise and name common 2D and 3D shapes. • Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. • Identify 2-D shapes on the surface of 3-D shapes. • Compare and sort common 2-D and 3-D shapes and everyday objects. 	<ul style="list-style-type: none"> • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. • Recognise angles as a property of shape or a description of a turn. • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and 	<ul style="list-style-type: none"> • Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. • Draw given angles, and measure them in degrees ($^{\circ}$). • Identify: <ul style="list-style-type: none"> • Angles at a point and one whole turn (total 360°). • Angles at a point on a straight line and a turn (total 180°). • Other multiples of 90°. • Use the properties of rectangles to deduce related facts and find missing lengths and
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			<p>sizes.</p> <ul style="list-style-type: none"> • Identify acute and obtuse angles and compare and order angles up to two right angles by size. • Identify lines of symmetry in 2-D shapes presented in different orientations. • Complete a simple symmetric figure with respect to a specific line of symmetry. 	<p>angles.</p> <ul style="list-style-type: none"> • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • Draw 2-D shapes using given dimensions and angles. • Recognise, describe and build simple 3-D shapes, including making nets. • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice
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				<p>the radius.</p> <ul style="list-style-type: none"> • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles.
<p>To describe position, direction and movement</p>		<ul style="list-style-type: none"> • Describe position, direction and movement, including whole, half, quarter and three-quarter turns. • Order and arrange combinations of mathematical objects in patterns and sequences. • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti- 	<ul style="list-style-type: none"> • Recognise angles as a property of shape and as an amount of rotation. • Identify right angles, recognise that 2 right angles make a half turn and 4 make a whole turn. • Identify angles that are greater than a right angle. • Describe positions on a 2-D grid as coordinates in the first quadrant. • Describe movements between positions as translations of a given unit to the left/right and 	<ul style="list-style-type: none"> • Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. • Describe positions on the full coordinate grid. (all four quadrants) • Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

		clockwise).	up/down. • Plot specified points and draw sides to complete a given polygon.	
To use measures		<ul style="list-style-type: none"> • Compare, describe and solve practical problems for: • lengths and heights. • mass/weight. • capacity and volume. • time. • Measure and begin to record: • lengths and heights. • mass/weight. • capacity and volume. • time. (hours, minutes, seconds). 	<ul style="list-style-type: none"> • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple 2-D shapes. • Add and subtract amounts of money to give change. (£ and p) • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, 	<ul style="list-style-type: none"> • Convert between different units of metric measure. • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres

		<ul style="list-style-type: none"> • Recognise and know the value of different denominations of coins and notes. • Sequence events in chronological order using language. • Recognise and use language relating to dates, including days of the week, weeks, months and years. • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. • Choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. 	<p>minutes and hours; use appropriate vocabulary.</p> <ul style="list-style-type: none"> • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events. • Convert between different units of measure. (for example, kilometre to metre; hour to minute) • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. • Find the area of rectilinear shapes by counting squares. • Estimate, compare and calculate different measures, including 	<p>(m²) and estimate the area of irregular shapes.</p> <ul style="list-style-type: none"> • Estimate volume and capacity. • Solve problems involving converting between units of time. • Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling. • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. • Use, read, write and convert between standard units, converting measurements of length,
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		<ul style="list-style-type: none"> • Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$. • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. • Find different combinations of coins that equal the same amounts of money. • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. • Compare and sequence intervals of time. • Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a 	<p>money in pounds and pence.</p> <ul style="list-style-type: none"> • Read, write and convert time between analogue and digital 12- and 24-hour clocks. • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. 	<p>mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.</p> <ul style="list-style-type: none"> • Convert between miles and kilometres. • Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area and volume of shapes. • Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other
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		<p>clock face to show these times.</p> <ul style="list-style-type: none"> • Know the number of minutes in an hour and the number of hours in a day. 		units.
To use statistics		<ul style="list-style-type: none"> • Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. • Ask and answer questions about totalling and comparing categorical data. 	<ul style="list-style-type: none"> • Interpret and present data using bar charts, pictograms and tables. • Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts, pictograms and tables. • Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • Solve comparison, sum and difference problems using information 	<ul style="list-style-type: none"> • Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables, including timetables. • Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate and interpret the mean as an average.

			presented in bar charts, pictograms, tables and other graphs.	
To use algebra		<ul style="list-style-type: none"> • Solve addition and subtraction problems involving missing numbers. 	<ul style="list-style-type: none"> • Solve addition and subtraction, multiplication and division problems that involve missing numbers. 	<ul style="list-style-type: none"> • Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems algebraically. • Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables.
		<ul style="list-style-type: none"> • Solve addition and subtraction problems involving missing numbers. 	<ul style="list-style-type: none"> • Solve addition and subtraction, multiplication and division problems that involve missing numbers. 	<ul style="list-style-type: none"> • Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems

				<p>algebraically.</p> <ul style="list-style-type: none"> • Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables.
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Characteristics of Mathematics Teaching and Learning in Mathematics Curriculum

- An understanding of the important concepts and an ability to make connections within mathematics.
- A broad range of skills in using and applying mathematics.
- Fluent knowledge and recall of number facts and the number system.
- The ability to show initiative in solving problems in a wide range of contexts, including the new or unusual.
- The ability to think independently and to persevere when faced with challenges, showing a confidence of success.
- The ability to embrace the value of learning from mistakes and false starts.
- The ability to reason, generalise and make sense of solutions.
- Fluency in performing written and mental calculations and mathematical techniques.

- A wide range of mathematical vocabulary.
- A commitment to and passion for the subject.

Support for Pupils (outcomes below the expected milestones)

Number

P4	P5	P6	P7	P8	Early Years
<ul style="list-style-type: none"> • Show an awareness of number activities and counting. 	<ul style="list-style-type: none"> • Respond to and join in with familiar number rhymes, stories, songs and games. • Indicate 1 or 2. • Demonstrate an awareness of contrasting quantities. 	<ul style="list-style-type: none"> • Demonstrate an understanding of one-to-one correspondence in a range of contexts. • Join in rote counting up to 5. • Count reliably to 3, make sets of up to 3 objects and use numbers to 3 in familiar activities and games. • Demonstrate an understanding of the idea of 'more'. • Join in with new number rhymes, songs, stories and games. 	<ul style="list-style-type: none"> • Join in rote counting to 10. • Count at least 5 objects reliably. • Recognise numerals from 1 to 5 and understand that each represents a constant number or amount. • Demonstrate an understanding of 'less'. • In practical situations respond to 'add 1' to a number of objects. 	<ul style="list-style-type: none"> • Join in with rote counting to beyond 10. • Rote count onwards from a given small number. • Recognise differences in quantity. • Recognise numerals from 1 to 9 and relate them to sets of objects. • In practical situations respond to 'add 	<ul style="list-style-type: none"> • Count actions or objects. • Count up to 3 or 4 objects by saying one number name for each item. • Count objects to 10, and begin to count beyond 10. • Count up to 6 objects from a larger group. • Count an irregular arrangement of up to 10 objects. • Estimate how many objects can

				<p>1' to or 'take 1 away' from a number of objects.</p> <ul style="list-style-type: none"> • Use ordinal number when describing the position of objects, people or events. • Estimate a small number (up to 10) and check by counting. 	<p>be seen, and check by counting them.</p> <ul style="list-style-type: none"> • Recognise some numerals of personal significance. • Recognise numerals 1 to 5. • Select the correct numeral to represent 1 to 5, then 1 to 10 objects. • Find the total number of items in 2 groups by counting all of them. • Find 1 more or 1 less from a group of up to 5 objects, then 10 objects. • Begin to use the vocabulary involved in adding and
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					<p>subtracting in practical activities.</p> <ul style="list-style-type: none"> • Record, using marks that can be interpreted or explained. • Begin to identify own mathematical problems based on interests. • Solve problems involving doubling, halving and sharing.
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Properties of shapes and measures

P4	P5	P6	P7	P8	Early Years
<ul style="list-style-type: none"> • Search for objects that have gone out 	<ul style="list-style-type: none"> • Search intentionally for 	<ul style="list-style-type: none"> • Search for objects not found in their 	<ul style="list-style-type: none"> • Respond to 'forwards' and 	<ul style="list-style-type: none"> • Compare objects directly, focusing on 	<ul style="list-style-type: none"> • Begin to use everyday language

<p>of sight, hearing or touch, demonstrating the beginning of object permanence.</p> <ul style="list-style-type: none"> • Match big objects and small objects. • Demonstrate an interest in position and the relationship between objects. 	<p>objects in their usual place.</p> <ul style="list-style-type: none"> • Find big and small objects on request. • Compare the overall size of one object with that of another where there is a marked difference. • Explore the position of objects. 	<p>usual place, demonstrating understanding of object permanence.</p> <ul style="list-style-type: none"> • Compare the overall size of one object with that of another where the difference is not great. • Manipulate 3D shapes. • Show an understanding of words, signs and symbols that describe positions. 	<p>‘backwards’.</p> <ul style="list-style-type: none"> • Pick out described shapes from a collection. • Use familiar words in practical situations to compare sizes and quantities. 	<p>one dimension such as length or height where the difference is marked, and indicate ‘the long one’ or ‘the tall one’.</p> <ul style="list-style-type: none"> • Show awareness of time, through some familiarity with names of the days of the week and significant times in the day (such as meal times, bed times). • Respond to mathematical vocabulary (such as ‘straight’, ‘circle’, ‘larger’) to describe the shape and size of solids and flat shapes. • Describe shapes in simple models, pictures and patterns. 	<p>related to money.</p> <ul style="list-style-type: none"> • Order and sequence familiar events. • Measure short periods of time in simple ways. • Describe relative positions (such as behind or next to). • Order 2 or 3 items by length or height. • Order 2 items by weight or capacity. • Use familiar objects and common shapes to create and recreate patterns and build models. • Begin to use mathematical names for ‘solid’ 3D shapes and ‘flat’ 2D
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					<p>shapes, and mathematical terms to describe shapes.</p> <ul style="list-style-type: none"> • Select a particular named shape.
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Challenge for Pupils (outcomes above the expected milestones)

Years 7, 8 and 9

<p>Algebra: expressing relations</p> <ul style="list-style-type: none"> • Read and interpret algebraic notation. • Express known relations algebraically, using accurate notation, including prioritisation of operations. • Expand products of binomials. • Simplify expressions involving sums of products 	<p>Number: calculation and accuracy</p> <ul style="list-style-type: none"> • Use place values, including for decimals, measures, the language of larger and smaller numbers, and ordering numbers, including the correct use of =, \neq, $<$, $>$, \leq, \geq. • Use the four operations, including efficient written methods, applied to a range of numbers, both positive and negative. • Understand and use 	<p>Number theory</p> <ul style="list-style-type: none"> • Know and use: • prime numbers • common factors and common multiples for whole numbers with 2 and 3 digits. • highest common factor and lowest common multiple, understanding these as the intersection and union of the prime factors. • other classifications of 	<p>Algebra: using equations and functions</p> <ul style="list-style-type: none"> • Use formulae by substitution to calculate the value of a variable. • Begin to model problems algebraically. • Solve linear equations in one variable. • Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and approximate
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<p>and powers.</p> <ul style="list-style-type: none"> • Find the nth term in an arithmetic sequence. • Find the nth term in geometric, quadratic and other sequences. • Produce graphs of linear and quadratic functions of one variable with appropriate scaling (using equations in x and y and the Cartesian plane). • Interpret mathematical relationships both algebraically and geometrically. 	<p>conventional notation for the priority of operations, including brackets, powers, roots and reciprocals.</p> <ul style="list-style-type: none"> • Use mass, length, time, money and other measures. • Compare, order and convert between fractions and decimals. • Interpret percentages and percentage changes as a fraction or a decimal, and calculate these using multiplication. • Interpret and compare numbers in standard form (such as $A \times 10^n$, where n is positive or negative). • Estimate number, measures and approximate answers, including using these to check other calculation methods. • Round numbers and measures to an appropriate degree of accuracy, including simple error intervals, using standard interval 	<p>number, including product notation</p> <ul style="list-style-type: none"> • integer powers and associated roots (square, cube and higher), including the use of surd notation (e.g. $\sqrt{8}$). • Distinguish between exact answers and decimal approximations. 	<p>solutions of simultaneous equations.</p> <ul style="list-style-type: none"> • Use given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs, to approximate solutions to problems.
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	and inequality notation.		
	<ul style="list-style-type: none">• Use a calculator to calculate results accurately and then interpret them appropriately.		